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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF

Confirmation No.: 2635

OKASE et al.

Group Art Unit: 2818

Appln. No.: 10/058,290

Examiner: Berry, Renee R.

Filed: January 30, 2002

Title: PLATING APPARATUS AND METHOD OF MANUFACTURING
SEMICONDUCTOR DEVICE

October 9, 2003

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RESPONSE TO OFFICIAL ACTION

Hon. Commissioner of Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

This is in response to the Office Action dated July 9, 2003.

In the Office Action, Claims 1-6 were rejected under 35 U.S.C. § 103(a) over Tanaka et al. patent 5,200,048 (hereinafter "Tanaka") in view of Smith patent 4,818,349 (hereinafter "Smith").

Reconsideration and withdrawal of this rejection are respectfully requested, at least because the Office Action fails to provide a prima facie case of obviousness as follows.

The Office Action Fails To Show That the Combination Of References Teaches Or Suggests All of the Claimed Limitations.

To establish a prima facie case of obviousness, all of the claimed limitations must be taught or suggested by the prior art.

The Applicant respectfully submits that the Office Action fails to show that all of the claimed limitations are taught or suggested by the prior art.

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For example, at least the contact member recited in claim 1 is not taught or suggested in Tanaka or in Smith.

Claim 1 sets forth an apparatus comprising, *inter alia*,

“a contact member, disposed in the workpiece holding mechanism, that can electrically contact with the circumferential edge of the workpiece so to form a conductive layer on the workpiece surface, which is in contact with the plating solution, as a second electrode;

wherein the contact member is divided along the circumferential direction of the workpiece to be electrically contacted.” (See claim 1).

Tanaka discloses a specific electroplating apparatus for plating half bearings. Figs. 5A and 5B are respectively a schematic plain view and front-elevational views of half bearings 1. Half-bearings 1 are arranged or arrayed into a semi-cylindrical configuration between the two plates 3 and 4 (column 3, lines 3-5 and Fig. 1). The upper plate 3 is an electrically-conductive plate whereas the lower plate 4 is an electrically-insulative plate (column 3, lines 1-2). Even if the upper plate 3 corresponds to a certain contact member, the upper plate 3 is not divided along the circumferential direction of the half bearings 1.

At least because of the above reason, Tanaka does not teach or suggest the contact member recited in claim 1. (Please note that the Office Action states at page 3, lines 4-6 as follows: “However, Tanaka does not teach the limitations of claims 2-6 nor of claim 1 - the contact member is divided along the circumferential direction of the workpiece to be electrically contacted.”)

Regarding Smith, the Office Action fails to show that Smith teaches or suggests the contact member recited in claim 1. The Office Action only briefly states at page 4, lines 1-3:

"In regard to claims 1 and 6, Smith teaches a plating apparatus having a contact member is divided into six or more sections along the circumferential direction of the workpiece to be electrically contacted at column 6, lines 60-66."

However, at column 6, line 60-66, Smith only states:

"... full so that there will be an even layer of plating deposited on the surface. Baffle 66 in manifold 52 allows the solution to accumulate to maintain the a full chamber. Butterfly valve 160 in the alternative manifold embodiment 152 increases back pressure against the plating solution, thus enabling the chamber to be filled while allowing the flow rate to be maintained."

Thus, the Office Action fails to show that Smith teaches a plating apparatus having the contact member is divided into six or more sections along the circumferential direction of the workpiece to be electrically contacted as stated in the Office Action.

Moreover, the Office Action fails to show that Smith teaches or suggests the contact member recited in claim 1, i.e. "a contact member, disposed in the workpiece holding mechanism, that can electrically contact with the circumferential edge of the workpiece so to form a conductive layer on the workpiece surface, which is in contact with the plating solution, as a second electrode; wherein the contact member is divided along the circumferential direction of the workpiece to be electrically contacted."

In view of the foregoing, the Office Action fails to show that the combination of Tanaka and Smith teaches or suggests all of the claimed limitations.

Therefore, the Office Action fails to establish a prima facie case of obviousness.

The Office Action Fails To Show Suggestion Or Motivation To Modify the Reference Or To Combine Reference Teachings.

Furthermore, to establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

The Applicant respectfully submits that the Office Action fails to show suggestion or motivation to modify the reference or to combine reference teachings.

The Office Action refers to an alleged reason to modify the reference only briefly in page 4, lines 15-17, "... , since such a modification would result in a maskless system for selectively plating zone of a continuously moving workpiece or strip of material at column 2, lines 21-24 of Smith."

However, this does not show why a person skilled in the art is motivated to modify Tanaka's invention to have a function of selective plating of Smith's invention.

Tanaka's invention is electroplating apparatus for plating half bearings, as clearly shown in the title of the invention: "Electroplating Apparatus for Plating Half Bearings." (column 1, lines 1-2).

Half bearings generally do not need the selective plating of Smith's invention. Smith's specification itself describes, in the background of the invention, why a function of selective plating is needed as follows:

"In one method of manufacturing electrical terminals, the terminals are stamped and formed from a metal strip and are attached to a carrier strip. This carrier strip is useful for strip feeding the terminals through successive manufacturing operations. One necessary manufacturing operation involves plating, i.e., electroplating the electrical contact surfaces of the noble metal alloys. These metals are characterized by good electrical conductivity and little or no formation of oxides that reduce the conductivity. Therefore, these metals, when applied as plating, will enhance conductivity of the terminals. The high cost of these metals

has necessitated precision deposition on the contact surfaces of the terminals, and not on surfaces of the terminals on which plating is unnecessary." (column 1, pages 14-28).

The Office Action fails to show why Tanaka's apparatus for plating half bearings need to be modified to have a function of selective plating of Smith's invention. In fact, a person skilled in the art would rather think that half bearings in Tanaka's invention need not be selectively plated as in Smith's invention. Therefore, Smith teaches away from the modification of Tanaka.

In view of the foregoing, the Office Action fails to show that there is suggestion or motivation to modify the reference or to combine reference teachings.

Therefore, the Office Action fails to establish a prima facie case of obviousness.

Conclusion

At least for these reasons, claim 1 is not rendered obvious over Tanaka in view of Smith. Claim 2-5 depend from claim 1. Thus, claims 2-5 are also allowable, at least for the reasons claim 1 is allowable.

Therefore, withdrawal of this rejection under 35 U.S.C. § 103(a) is respectfully requested.

Respectfully submitted,
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